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NOAA TECHNICAL MEMORANDUM  
NOS-NCCOS-CCEHBR-0003



**REPORT OF THE SEA TURTLE  
HEALTH ASSESSMENT WORKSHOP,  
2-3 February 1998  
Part I:  
Background and Information Needs**



**Edited by  
Patricia A. Fair and Larry J. Hansen**

U.S. Department of Commerce  
National Oceanic and Atmospheric Administration  
National Ocean Service  
National Centers for Coastal Ocean Science  
Center for Coastal Environmental Health and Biomolecular Research  
219 Fort Johnson Road  
Charleston, South Carolina 29412

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December 1998

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Correct citation of this report is:

Fair, P.A. and L.J. Hansen (editors). 1998. Report of the Sea Turtle Health Assessment Workshop, 2-3 February 1998, Part I: Background and Information Needs. NOAA Technical Memorandum NOS-NCCOS-CCEHBR-0003, pp.1-88.

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## Sea Turtle Strandings in Texas

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Stranded sea turtles are those found washed ashore or floating, either dead or alive (Teas, 1993). The Sea Turtle Stranding and Salvage Network (STSSN) was established in 1980 to document strandings of sea turtles on United States beaches along the Gulf of Mexico, Atlantic Ocean, and Caribbean Sea. Stranded sea turtles provide a valuable source of biological data that can be used for assessing health, population trends, mortality factors, and other topics.

Although a few aerial, directed capture netting, tracking, and nesting investigations have been conducted on sea turtles in Texas, the majority of biological data collected for free-ranging sea turtles in Texas have originated from stranded individuals. Stranded turtles have provided most of the information known about the species occurrence, relative abundance, life history, distribution, sizes, and population trends of sea turtles in Texas (Rabalais and Rabalais, 1980; Hildebrand, 1982, 1983; Rabalais, 1983; Amos, 1989; Plotkin, 1989, 1996; Whistler, 1989; Duronslet et al., 1990; Shaver, 1991, 1994, in press a, in press b; Manzella and Williams, 1992; Plotkin et al., 1993; Teas, 1993; Stabenau et al., 1996; Cannon, in press). Similarly, some of the most extensive studies of food habits (Shaver, 1990a; Shaver, 1991; Plotkin et al., 1993; Plotkin, 1996; Shaver, in press a) and sex ratios (Plotkin, 1989; Shaver, 1991; Plotkin et al., 1993; Stabenau et al., 1996; Cannon, in press) of non-captive sea turtles in Texas have been done using stranded individuals.

Sea turtle environmental health problems can be classified as those of natural occurrence and those of anthropogenic origin (George, 1996; Lutcavage et al., 1996). Naturally occurring sea turtle health problems (bites, hypothermic stunning, etc.) have been documented for some stranded sea turtles in Texas (Hildebrand, 1982, 1983; Heinly et al., 1988; Whistler, 1989; Shaver, 1990b, 1995, 1996a, 1996b, in press a; Caillouet et al., 1996). However, health problems resulting from anthropogenic sources (anthropogenic debris entanglement and ingestion, chemical pollution, boat collisions, fisheries interactions, mutilations, etc.) have been documented more frequently for stranded sea turtles in Texas (Heinly et al., 1988; Plotkin and Amos, 1988, 1990; Stanley et al., 1988; Whistler, 1989; Duronslet et al., 1990; Caillouet et al., 1991, 1992, 1996; Sis et al., 1993; Shaver, 1994, 1995, 1996a, 1996b, in press a, in press b; Witzell and Teas, 1994; Cannon, in press; Shaver and Plotkin, in press). STSSN data from Texas have been used to evaluate threats to sea turtles in the marine environment from human activities (Magnuson et al., 1990; Plotkin and Amos, 1990; Caillouet et al., 1991), develop protection measures for them, evaluate effectiveness of those protection measures (Shaver, 1994, 1995, 1996a, 1996b, in press a, in press b; Caillouet et al., 1996; Shaver and Plotkin, in press), and initiate additional law enforcement and inspection efforts to reduce mortality (Shaver, 1994, 1995, 1996a, 1996b).

Most STSSN participants in Texas are volunteers who are trained biologists employed by various federal and state agencies and universities. Stranded turtles are located by network participants who find them during the course of their duties or while responding to reports from the public. Also, turtles are located during systematic surveys that are conducted for stranded turtles on most offshore (Gulf of Mexico) beaches along the Texas coast. However, there are no systematic surveys and relatively little STSSN coverage on

#### Session IV: Strandings in Texas - Shaver

the Matagorda Peninsula or on any inshore (bay, channel) beaches, and hence only a portion of the turtles that strand in those areas are documented. Additionally, some turtles that strand in areas with good STSSN coverage also are probably never documented because they are covered by sand, crushed by passing vehicles, or removed from the beach by predators or humans prior to STSSN detection. It is also important to note that only a portion of the turtles that succumb in the marine environment actually wash ashore and become available for documentation (Murphy and Hopkins-Murphy, 1989). Hence, STSSN totals represent minimum stranding and mortality estimates.

Each stranded sea turtle found in Texas is documented on a standardized STSSN form. Information on the date, location, species, size, tags, condition, final disposition, and injuries is recorded on the form. All stranded turtles are examined for metal and plastic flipper tags. Most Kemp's ridleys (*Lepidochelys kempi*) are also examined for living, PIT and magnetic tags, important to identify headstarted individuals (Fontaine et al., 1993). Most stranded turtles are also photographed. STSSN participants are required to fax stranding forms to me immediately after completion and I report all strandings to the national STSSN coordinator at least once a week and often more frequently.

Live turtles (code 0) are taken to one of nine rehabilitation facilities in the state. Health assessment protocols and holding conditions vary considerably at the different facilities. Health assessment and care records for live stranded turtles remain at the rehabilitation facilities. Successfully rehabilitated turtles are tagged and released.

Many of the dead turtles that have apparent human-inflicted injuries are confiscated by law enforcement officials and are unavailable for necropsy or sampling. Most of the dead stranded turtles that are code 1 (fresh dead), code 2 (moderately decomposed), and code 3 (severely decomposed) and are located in more assessable areas are salvaged for necropsy and study. Also, most of the turtles that die during rehabilitation are necropsied. Veterinarians thoroughly necropsy very few turtles and maintain the records of necropsies they conduct. Most of the turtles necropsied are code 2 and code 3 and receive gross necropsies (Wolke and George, 1981) during which efforts are made to detect external and internal injuries, examine gut contents for ingested food and debris items, and examine gonads to determine sex. Tissue samples are obtained from some turtles and forwarded to the National Marine Fisheries Service (NMFS) office in Charleston, South Carolina for archival or to various researchers conducting genetic studies. Also, gonads are removed from some large Kemp's ridleys for investigation of reproductive condition. These gross necropsies are conducted by a few trained individuals, are performed on the beach or at a facility at Padre Island National Seashore, and are reported directly on the STSSN forms. Because of differences in necropsy protocol, experience, purpose, and conditions, necropsy results from various sites in Texas may not be comparable.

From 1993-1997, 2,083 non-headstarted sea turtles were documented stranded on the Texas coast and assigned condition codes. Of those, 13.6 % were code 0, 10.1 % were code 1, 26.6 % were code 2, 39.6 % were code 3, and 10.1 % were either code 4 (dried carcass) or code 5 (bones only) when found. It is important to note that the codes 0 and 1 percentages during this time period were elevated by large hypothermic stunning events that occurred in 1996 and 1997.

Of the 523 non-headstarted sea turtles found stranded on the Texas coast during 1997, about 213 (41%) were necropsied. Approximately 10 were thoroughly necropsied by veterinarians and about 203 received gross necropsies. For some of the stranded turtles, such as those found cold stunned, entangled, hooked in the throat, etc., the cause of stranding or death was determined from examination and/or necropsy. However, in most cases it was not possible to conclusively determine the cause of stranding or death. Most were decomposed when found/necropsied and a large proportion probably died as a result of incidental capture

in shrimp trawls. Unfortunately, it is not currently possible to identify mortality due to incidental capture from external or internal examination of turtle carcasses. Despite current mandatory use of turtle excluder devices (TEDs) and reported high compliance with TED regulations (NMFS, pers. comm.), there continues to be a correlation between shrimping effort in Gulf of Mexico (offshore) waters and strandings on Texas offshore beaches (Magnuson et al., 1990; Caillouet et al., 1991, 1992, 1996; Shaver, 1994, 1995, 1996a, 1996b, in press a). Of the 523 turtles found stranded on the Texas coast during 1997, 369 were found on offshore beaches. There was a 90% decrease in strandings on Texas offshore beaches during the 8 weeks of the Texas Closure (when Gulf of Mexico waters off the Texas coast were closed to shrimp trawling out to 322 km) as compared to the 8 weeks preceding and following the closure during 1997 (Shaver, in press b).

Data currently collected during the documentation and gross necropsy of stranded sea turtles in Texas will continue to provide useful health information. Additional biological data and samples from code 0 and code 1 animals might provide further useful health information. If a new health assessment program prioritizes more detailed analyses of code 0 and code 1 animals (blood serology, pathology, histology, toxicology, etc.) than is currently conducted, a consistent protocol that is as safe as possible for live turtles and health assessment personnel should be established. Also, since most participants and veterinarians involved in STSSN activities in Texas are volunteers, additional funds would be needed to transport code 0 and code 1 animals, evaluate or necropsy them, collect and analyze additional samples from them, and submit health assessment records to a centralized database. However, even with additional funding it will be difficult to collect additional data and samples when numerous sea turtles strand at once and stranded turtles are widely distributed.

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